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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/804,872	03/13/2001	Robert McNamara		1825

7590 01/13/2005

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EXAMINER	
AKLILU, KIRUBEL	

ART UNIT	PAPER NUMBER
2614	

DATE MAILED: 01/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/804,872	MCNAMARA, ROBERT	
	Examiner	Art Unit	
	Kirubel Aklilu	2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 March 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *13 March 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

A note to the Applicant: The examiner kindly requests new copies of the drawing. The copies the USPTO currently has on file seem to have been damaged during an internal scanning process. The examiner appreciates the applicant's cooperation.

Drawings

Figure 1A and 1B should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.121(d)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

- Claims 2 and 3 are objected to because of the following informalities: The phrase "location 1" should be replaced by "first location" as to maintain consistency with claim 1's language. Appropriate correction is required.
- Claim 4 is objected to because of the following informalities: Claim 4 references to claim 2 but communication channel a(f,t) is not defined until claim 3. Examiner has assumed this error to be typographical and has

analyzed claim 4 to refer to claim 3 instead of claim 2. Appropriate correction is required.

- Claims 5 and 9-12 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim ***should refer to other claims in the alternative only***. See MPEP § 608.01(n). Accordingly, the claims have not been further treated on the merits.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3, 6-8, 13-16 and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Eldering et al. (U.S. Patent # 5,881,362).

1. As for **Claim 1**, Eldering et al. teach in a cable communications system between a first location and a second location (see Eldering col. 1 lines 14-15 "a return path is often provided to allow signals from the subscriber equipment to be sent to the central control point, or head-end"), the first location comprising an input and output to the cable communications system (see Fig. 1 unit 29 coaxial wiring, col. 4 lines 42-44 "The set top (25) connected to a TV (23) and a PC (27) shown in FIG. 1 are connected to the cable network via home coaxial wiring (29)"), the communications system comprised of two segments of R.F bandwidth, a first

segment of the RF bandwidth comprising a forward bandwidth capable of carrying one or more discrete RF channels from the cable system headend, through the cable network and from the second location to the first location (see fig. 9 unit SETTOP DIPLEX FILTER,194, col. 6 lines 17-21 "Referring to FIG.9, forward and return signals are separated by the set top diplex filter (194) which separates the downstream signal from the return signals by use of a diplex filter high pass section (225) and a diplex filter low pass section (227)"), and a second segment of the RF bandwidth comprising a reverse bandwidth and capable of carrying one or more discrete RF channels from the first location to the second location and through the cable network to the cable system headend(see col. 2 lines 21-24 "A similar hybrid fiber-coax configuration is used in the return path, where signals from the subscriber are transmitted in a low frequency band (e.g. 5-30 MHZ) on the coaxial cable"), the second location comprising an amplifier for the forward bandwidth and an amplifier for the reverse bandwidth (see Fig. 1 unit FORWARD AMPLIFIER, 63 and RETURN AMPLIFIER, 65 col. 4 lines 50-53 "A two-way amplifier (61), also known as an active, contains a forward amplifier (63) and a return amplifier (65) and provides gain for transmission of forward signals to the subscriber and for return signals to the node (71)"), and a communication path from the first location to the second location partitioned into two parts, a first part starting at the first location and running to an intermediate location (see fig. 1 unit 47 TAP is interpreted to be the intermediate location) between the first location and the second location (see fig. 1 unit 21 Residence, Filter Block 43, and unit 45 Drop Cable. First part of the return communication

link is interpreted to be the communication link between RESIDENCE 21 to unit 47 TAP), the first part of the communications path being susceptible to noise signals entering the communications path both within and outside of the RF communications channels carried within the reverse bandwidth (the first part of the communication system as defined above is the part of the communication system that is closer to the subscribers unit. Eldering teaches that ingress noise is present as a result of a great number of subscribers and subscribers having power divider (splitters), and low quality coaxial wiring (see col. 1 line 56 – col. 2 line 15 "The result of the large number of subscribers and the multiple connections in the home is that there are a large number of points on the cable network where undesirable signals can enter the return path"). Therefore, it is inherent that the first part of the communication as defined above will be more susceptible to noise), and a second part of the communications path starting at the intermediate location and running to the second location (see fig. 1 unit 51 FEEDER, ACTIVE 61 and unit 71 to node"), the second part of the communications path being more immune to noise signals entering the communications path both within and outside of the RF communications channels carried within the reverse bandwidth (because the second part of the communication path is further away from the subscribers location, it is obvious that the second part of the communication path will be more immune to noise signals), a method of controlling and minimizing the amplitude of noise signals from passing from the first part of the communications path to the second part of the communications path (see col. 2 lines 58-62 "In the second frequency band, signals coming form the cables inside

the residence are highly attenuated in a blocking filter so that noise and undesirable signals originating from inside the home in the second frequency band are effectively blocked from entering the return system.") comprising the steps of:

collecting all RF signals input into the first part of the communications path at the first location before noise signals are combined with the input signals (see col. 2 lines 63-65 "Signals from inside the home can be transmitted in the first frequency band at a power high enough to overcome signal-to-noise and signal-to-interference limitations");

amplifying all of the RF signals input into the first part of the communications path at the first location by an amount G (see col. 3 lines 30-34 "Signals from set tops and personal computers are transmitted in the 5-15 MHz region at signal levels in the range of 30-60 dBmV. Additional amplification of these signals can be provided by an amplifier in the coaxial termination unit.");

transmitting the amplified input signal through the first part of the communications path (see col. 3 lines 30-34 "Signals from set tops and personal computers are transmitted in the 5-15 MHz region at signal levels in the range of 30-60 dBmV. Additional amplification of these signals can be provided by an amplifier in the coaxial termination unit.); and

at a fourth location located in the second part of the communications path between the intermediate location and the second location, attenuating the amplified signals in the reverse bandwidth only to the degree necessary as not to cause the reverse amplifier located at the second location to go either into compression or overload (see col. 2 line 65 – col. 3 line 2 "In the event that these signals are too high in power for the active elements (e.g. amplifiers and/or lasers) to retransmit them without distortion, they can be attenuated at the input of the active devices." And fig. 7 unit 233 ATTENUATING ELEMENT col. 5 lines 52-55 "If the signal level coming form the set top or PC is too high in level an attenuating element (233) can be used to reduce the signal level before subsequent amplification by a fixed gain stage").

2. As for **Claim 3**, Eldering teaches a method as claimed in claim 1 wherein a communications channel a(f,t) is input at location 1 (see col. 3 lines 30-33 "Signals from settops and personal computers are transmitted in the 5-15 MHz region . . ." Signals from settops and personal computers that is transmitted via coaxial cable 29 of Fig. 1 is interpreted to be a communications channel a(f,t), which has amplitude of "a" and is time "t" and frequency "f" dependent signal).

3. As for **Claims 6-7**, claims 6-7 are analyzed with respect to Claims 1 and 3, respectively. Claims 1 and 3 have limitation with respect to one single input location (first location) and one single destination (second location), whereas claims 6-7 have similar limitation with the difference being claims 6-7 are in

reference to multiplicity of first locations and a single destination location (second location). However, Eldering also teaches having a multiplicity of clients within RESIDENCE 21 such as PC 27, SETTOP 25 and TV 23 which all comprise of the "multiplicity of locations". Therefore, claims 6-7 are analyzed and rejected with respect to claims 1 and 3 accordingly.

4. As for **Claim 8,** Eldering teaches a method as claimed in claim 2 wherein the amplitude of the input communications channel a(f,t) can be varied either manually or automatically via communications with the cable system headend (see col. 6 lines 34-37 "A closed loop control system in which the head-end senses the power in the received packets is used to determine if a particular set top needs to increase or decrease the power in its return transmission").

5. As for **Claim 13**, is an apparatus claim of Claim 1 and is rejected accordingly.

6. As for **Claim 14**, Eldering teaches the system as claimed in claim 13 wherein the means of amplifying the input signals are part of the input device (see Fig. 2 unit 201 COAXIAL TERMINATION UNIT, col. 3 lines 30-34 "Signals from settops and personal computers are transmitted in the 5-15 MHz at signal levels in the range of 30-60 dBmV. Additional amplification of these signals can be provided by an amplifier in the coaxial termination unit". Coaxial termination unit is interpreted to be part of the input device.).

7. As for **Claim 15**, Eldering teaches the system as claimed in claim 14 wherein the RF output of the input device is greater than 60 dBmV, (see col.3 lines 30-34 "Signals from settops and personal computers are transmitted in the 5-15 MHz region at signal levels in the range of 30-60 dBmV. Additional amplification of these signals can be provided by an amplifier in the coaxial termination unit." When additional amplification of these signals is provided, it is obvious that the RF output of the input device can be greater than 60 dBmV).

8. As for **Claim 16**, Eldering teaches the system as claimed in claim 13 wherein the means of attenuating the return signal is part of a stand alone device mounted at or near the demarcation point at the customer premise (see Fig. 7 unit 233 ATTENUATING ELEMENT, col. 5 lines 52-55 "If the signal level coming from the set top or PC is too high in level an attenuating element (233) can be used to reduce the signal level before subsequent amplification by a fixed gain stage". TAP 47 is considered to be a demarcation point of the customer premise and thus ATTENUATING ELEMENT 233 is considered to be near TAP 47, the demarcation point at the customer premise).

9. As for **Claim 21**, Eldering teaches the means of attenuating the return signal is part of a stand alone device which is part of the return path of the overall cable plant (this limitation is analyzed with respect to claim 16) and in which multiple devices provide additive and distributed attenuation in the reverse direction from the last directional coupler to the return amplifier at second location (see fig 7 unit

233 ATTENUATING ELEMENT and unit 247 RETURN AMPLIFIER, and fig. 8 unit 213 Coupler. Although coupler 213 and Attenuating Element 233 and Return Amplifier 247 are not shown in the same figure, it is considered that Coupler 213 is present before Attenuating element 233 and Return Amplifier. Therefore, Attenuating Element 233 is considered to be a device that provides additive and distributed attenuation in the reverse direction from the last directional coupler to the return amplifier at the second location).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 2, 4 and 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eldering et al. (U.S. Patent # 5,881,362).

10 As for **Claim 2**, Eldering teaches noise signal includes but is not limited to kT noise, impulse noise, ingress noise and any other external RF signals that are not part of a RF communications channels input at location 1(see col. 1 line 54 – col. 2 line 15 "The commonly used term for undesirable signals on the cable return path is ingress. Ingress is typically AM short-wave broadcast signals and industrial and atmospheric noise, which

can enter on the drop cable connecting the subscriber to the cable plant connection termed the tap, and via the coaxial wiring in the subscriber residence or business location."). Official Notice is taken that kT noise and impulse noise are included in the noise signal of a typical return path communication system.

11. As for **Claim 4**, Eldering teaches a method as claimed in claim 2 wherein the amplitude of the input communications channel a(f,t) can be varied either manually or automatically via communications with the cable system headend (see col. 6 lines 34-37 "A closed loop control system in which the head-end senses the power in the received packets is used to determine if a particular set top needs to increase or decrease the power in its return transmission".)

12. As for **Claim 17-19**, although Eldering does not expressly teach the means of attenuating the return signal is fixed of a specific value, is a variable attenuator over a specific value, or a combination of a fixed and variable attenuator over a specific range, **Official Notice** (MPEP § 2144.03) is taken that it is well known in the art to design an attenuator to be of a fixed specific value, variable over a specific range, or a combination thereof. Therefore, it would have been obvious to one of ordinary skill in the art to modify the means of attenuating the return signal of Eldering to be of fixed specific value, variable over a specific value, or a combination of the two. One would have been motivated to design the attenuator to be fixed over a specific range to have the advantage of low complexity in design when it is known that input signals to the attenuator are of fixed signal levels and need to be attenuated to a fixed amount. One would have been

motivated to design the attenuator to be variable over a specific range to have the advantage of using the same attenuator to attenuate signals when it is not known that the input signals to the attenuator would be of a fixed signal level. One would have been motivated to design the attenuator to be a combination of a fixed value and variable over a specific range to have the advantage of having an attenuator that can function when input signals to the attenuator can fixed to a specific value or can also be variable over a range of values.

13. As for **Claim 20**, Eldering teaches the means of attenuating the return signal is part of the cable network directional couplers and provide attenuation in the reverse bandwidth which is different than the coupling loss in the forward bandwidth (see Eldering col. 7 lines 47-61 "Referring to FIG. 8 the coaxial termination unit contains a connection from the drop cable (229) followed by a line side diplex filter (221) which divides signals into a forward branch (214) and a return branch (243) via a diplex filter high pass section (225) for the forward branch and a diplex filter low pass section (227) for the return branch." It is obvious that the diplex filter has a low pass and a high pass filter to separate the reverse bandwidth and forward bandwidth, and thus the attenuating element (Fig. 7 unit 233) would inherently provide an attenuation that is going to be different from the coupling loss in the forward bandwidth.

Claims 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Eldering et al. (U.S. Patent # 5,881,362) in view of Schwartzman et al. (U.S. Patent # 6,385,773).

14 As to **Claim 22**, limitations claimed in claim 22 can be found in claim 1. Therefore, claim 22 is analyzed and rejected as previously discussed with respect to claim 1. It is noted that the "interfering signals" is also interpreted to be part of noise, as is well known in the art. In light of this interpretation, this limitation is rejected with respect to Claim 1.

Although Eldering does not teach shifting all of the RF Input signals in a block to another portion of the RF spectrum, typically above the forward RF bandwidth, which is more immune to noise and interfering signals; Schwartzman et al. teach a method and apparatus for upstream frequency selection in order to shift from a frequency where excess noise is present to a different frequency where less noise is present (see Schwartzman col. 6 lines 1-5 "methods and system for changing upstream frequency channels when the frequency channel presently in use has too high a noise level and, in the process, avoid making frequency channel changes that will not result in a significant improvement are disclosed.", and col. 10 lines 65- col. 11 line 3 "At a step 312 the headend, instructs the cable modems in the cable plant using the particular upstream frequency channel with the high BER to transition to the frequency channel with the lower noise level as determined . . ."). In light of the teaching of Schwartzman, it would have been obvious to one of ordinary skill in the art to modify the teaching of Eldering to convert the input signal from a frequency band with high noise level to another frequency band with lower noise level. One would have been motivated to do this to have a communication method where upstream data can be transmitted in a frequency band with less noise so as to have a higher Signal to Noise ratio (SNR) at the headend receiver.

transmitting the frequency shifted input signals through the first part of the communications path. The modified teaching of Eldering in light of the teaching of Schwartzman et al. teaches transmitting the frequency shifted input signals through the first part of the communications path.(see Eldering col. 3 lines 30-34 "Signals from settops and personal computers are transmitted in the 5-15 MHz region at signal levels in the range of 30-60 dBmV. Additional amplification of these signals can be provided by an amplifier in the coaxial termination unit); and

attenuating or amplifying the signals that are output from the downshifted frequency band such that these signals reach the second location at the optimum amplitude for transmission by the reverse amplifier and do not cause the reverse amplifier located at the second location to go into either compression or overload (Eldering teaches the amplitude of the input communications channel is set to its maximum value, $a(f,t)_{MAX}$, (see fig. 10a – 10c, col. 5 line 55 "Fig. 10 illustrates the effect of increasing the signal level of a desired signal" and col. 2 lines 63-65 "Signals fro inside the home can be transmitted in the first frequency band at a power high enough to overcome signal-to-noise and signal-to-interference limitations." it is obvious that the amplitude of the input communication can be set to its maximum value $a(f,t)_{MAX}$ to achieve a desired signal-to-noise ratio)the attenuation, A, which occurs at the fourth location within the second part of the communications path between the intermediate location and the second location, is set to a value such that the amplified signal when attenuated to $Ga(f,t)_{MAX}/A$ in the reverse bandwidth does not cause the reverse amplifier located at the second location to go either into compression or overload (see col. 2 line 65 – col. 3 line

2 "In the event that these signals are too high in power for the active elements (e.g. amplifiers and/or lasers) to retransmit them without distortion, they can be attenuated at the input of the active devices.").

Although Eldering does not teach at a fourth location within the second part of the communications path between the intermediate location and the second location, block down-converting the input signals to the normal reverse bandwidth. In light of the teaching above of Schwartzman, it would have been obvious to one of ordinary skill in the art to reconvert the input signals to the reverse bandwidth if the noise level of the original frequency band had less noise present than the frequency band that the input signal was converted into. One would have been motivated to do this when the noise level of the converted frequency band gets higher than the noise level of the original frequency band.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kirubel Aklilu whose telephone number is 703-305-8144. The examiner can normally be reached on 9:00AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Miller can be reached on 703-305-4795. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KA
01/10/2005

NGOC-YEN VU
PRIMARY EXAMINER